RENEWABLE FUELS ASSOCIATION

TESTIMONY OF
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BEFORE THE
COMMITTEE ON ENERGY AND COMMERCE, SUBCOMMITTEE ON ENVIRONMENT
HEARING ON
"DISCUSSION DRAFT: THE 21ST CENTURY TRANSPORTATION FUELS ACT"

DECEMBER 11, 2018

Good morning, Chairman Shimkus, Ranking Member Tonko, and Members of the Subcommittee. My name is Geoff Cooper and I am president and CEO of the Renewable Fuels Association (RFA), the national trade association representing the U.S. ethanol industry.

The RFA has been the leading trade association for America's renewable fuels industry for over 37 years. Our mission is to advance the development, production and use of renewable fuels by strengthening America's ethanol industry and raising awareness about the benefits of biofuels. Founded in 1981, RFA serves as the premier organization for industry leaders and supporters. With over 300 members, we are working to help America become cleaner, safer, more energy secure, and economically vibrant.

The ethanol industry makes a vital contribution to our nation's economy. The production of 15.9 billion gallons of ethanol in 2017 directly employed 71,906 American workers in the manufacturing and agriculture sectors. In addition, the ethanol industry supported 285,587 indirect and induced jobs across all sectors of the economy. The industry created $24 billion in household income and contributed $45 billion to the national Gross Domestic Product (GDP). Moreover, ethanol producers paid nearly $10 billion in federal, state and local taxes, and spent $32 billion on raw materials, inputs, and other goods and services.[1]

I want to thank the Chairman and the members of the Committee for their thoughtful

[1] John M. Urbanchuk (ABF Economics). "Contribution of the Ethanol Industry to the Economy of the United States in 2017." February12, 2018. Available at: https://ethanolrfa.org/wp-content/uploads/2018/02/RFA-2017-Ethanol-Economic-Impact-01_28_17_Final.pdf

consideration of future energy policy approaches. RFA has been an active participant throughout this process, and we have appreciated the opportunity to share our perspective on the vital role that biofuels like ethanol can play in our energy future. The draft legislation we are here to discuss today reflects a good deal of those deliberations; it represents an important first step in the debate about future fuels policy, and specifically the role of high octane low carbon (HOLC) fuels.

As currently drafted, however, RFA cannot support the proposal because it falls short of providing the future market certainty and clear growth trajectory our industry needs. By eliminating the Renewable Fuel Standard (RFS) requirements for conventional biofuels in 2022 and adopting a no-growth methodology for advanced and cellulosic biofuel requirements through 2032, the draft bill would undermine the considerable progress our nation has made toward greater energy security, economic vitality, and environmental health.

We believe the RFS has been a remarkable success. It has lowered consumer fuel prices, decreased reliance on imported petroleum, reduced emissions of harmful tailpipe pollutants and greenhouse gases (GHG), supported hundreds of thousands of jobs in rural America, and added value to the crops produced by our nation's farmers.[2]

The RFS *does not* end in 2022, and with proper oversight and implementation, the program will continue to drive innovation, support rural economies, and provide cleaner and more affordable fuel choices at the pump. We simply cannot support eliminating the RFS program, as the draft envisions, without a much stronger signal to the market that ethanol's role in our fuel supply will continue to grow. A 95 RON standard does not provide that signal and is not a suitable replacement for the RFS beyond 2022. Indeed, as concluded in a new study commissioned by the Energy Information Administration (EIA), oil companies could easily meet a 95 RON standard without using any additional ethanol beyond current levels.[3]

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[2] RFA. "The RFS2: Then and Now." December 2017. Available at: https://ethanolrfa.org/wp-content/uploads/2017/12/RFS2-Ten-Years.pdf. *See also*, Gal Hochman and David Zilberman. "Corn Ethanol and U.S. Biofuels Policy 10 Years Later: A Quantitative Assessment." *American Journal of Agricultural Economics*, Volume 100, Issue 2, 1 March 2018, Pages 570–584, https://doi.org/10.1093/ajae/aax105.

[3] Baker & O'Brien for U.S. Energy Information Administration. "Analysis of Octane Costs: Phase 2 Report." November 2018. Available at: www.eia.gov/analysis/octanestudy/ (Attached)

I. BACKGROUND

Today, ethanol is blended into roughly 98 percent of the gasoline sold in the United States, the majority as E10 (blends containing 10% ethanol and 90% gasoline). As a blend component, ethanol provides a valuable clean octane boost, displacing toxic substances in gasoline and helping refiners comply with obligations under the Clean Air Act. Not only is ethanol a thoroughly tested, safe, and effective motor fuel, it is the lowest cost source of octane available to refiners and blenders today. Increasing the use of high-octane, low-carbon ethanol is the first and easiest step we can take to improve engine efficiency, lower tailpipe emissions, and reduce greenhouse gases from transportation while reducing costs at the pump.

Because ethanol is the cleanest and most affordable source of octane available today, it will play a pivotal role in enabling low-cost advanced vehicle technologies that will improve fuel economy and significantly reduce harmful tailpipe pollution and GHG emissions. Ethanol has unique properties that make it a highly attractive component of the liquid fuels that will enable the advanced engines of tomorrow. Not only is ethanol a renewable fuel that offers superior GHG performance, but it also is the most economical octane source, possesses an extremely high-octane rating (109 RON "pure component," 108-119 AKI "blending octane"), a high heat of vaporization, and high octane sensitivity. The auto engineers, government scientists, and academic researchers who are examining the costs and benefits of our future liquid fuel options have identified these attributes as highly desirable.[4]

II. DISCUSSION DRAFT: THE 21ST CENTURY TRANSPORTATION FUELS ACT

The discussion draft is a comprehensive effort to address a variety of issues that have been raised by stakeholders over the past several years. The following reflects our views on several key provisions of the draft that are of particular interest to ethanol producers.

a. Eliminating the conventional biofuel provisions of the RFS after 2022

By any measure, the RFA believes the RFS has been a tremendous success. It has lowered our

[4] The significant technical and economic advantages of utilizing ethanol as a source of octane were enumerated in the attached letter from the RFA to the committee on April 12, 2018 (Attached).

dependence on imported petroleum, expanded domestic fuel supplies, and lowered gasoline prices at the pump. Meanwhile, the RFS helped undergird the economic revival of rural America; ethanol has provided a tremendously important value-added market for farmers, allowing significant reductions in federal farm program costs. Moreover, the RFS has reduced pollution in our nation's cities while reducing GHG emissions from transportation fuels.

The RFS is stimulating investment in next generation biofuels, with dozens of existing corn ethanol facilities evolving into true biorefineries that also produce advanced biofuels and bioproducts. The RFS is also driving the marketplace beyond ethanol's use as an "additive," which was a fundamental objective of the program. Higher ethanol blends, from E15 to E85, are providing consumers lower-cost choices at the pump.

The oil industry does not like the RFS—precisely because it has worked to reduce petroleum consumption and provide access to a market that is otherwise closed to competition. But the oil industry's dislike for the RFS is no reason to scrap a program that has delivered so many benefits to consumers across the country. Indeed, the RFS can work in concert with, not in conflict with, a high-octane fuel requirement. In this scenario, the RFS would assure clean, renewable octane sources like ethanol remain available and are allowed to compete as increased demand for high-octane fuels materializes.

Some stakeholders have suggested the uncertainty associated with EPA's discretion to set RFS volumes for 2023 and beyond should motivate us to discuss legislative changes. However, the risk and uncertainty associated with more Administrative discretion post-2022 is not alleviated by simply eliminating the program's conventional renewable fuel requirements altogether. That is particularly true when the proposal's 95 RON requirement, as drafted, will not drive increased market opportunities for renewable fuel producers.

b. Establishing a 95 RON Octane Standard for 2023 and Later Vehicles

The RFA strongly supports a transition to high-octane fuels. Establishing a 95 RON standard for all light-duty vehicles produced in 2023 and beyond is potentially a step in the right direction. But while a 95 RON standard could help automakers meet increasingly stringent fuel economy and emissions standards, we are not convinced it would expand the market for ethanol, despite

ethanol's cost effectiveness and inherently lower carbon content.

Numerous studies by the automotive industry, U.S. Department of Energy, and academia have examined the efficiency gains and emissions reductions that can be achieved when HOLC fuels are used in internal combustion engines with high compression ratio, turbocharging, and other advanced technologies. These studies have repeatedly shown that high octane fuels (98-100 RON) used in high compression engines improve efficiency and reduces emissions by 4-10%, depending on drive cycle and other factors. Studies also demonstrate that fuel economy and vehicle range using HOLC blends like E25 and E30 are equivalent or superior to the vehicle's performance using E10, even though the E25 and E30 blends have lower energy density. In other words, less energy is needed to travel the same distance, resulting in lower emissions per mile.

Even though ethanol is far superior to other octane boosters in terms of cost, GHG emissions, health impacts, and other factors, a 95 RON standard—when paired with elimination of the RFS conventional renewable fuel requirements—would *not* result in increased market opportunities for ethanol. To the contrary, we believe a 95 RON standard in the absence of the RFS, or other environmental and economic performance requirements, would reduce demand for ethanol. Gasoline producers and blenders would simply meet the demand for more octane by increasing reformer severity and producing greater volumes of higher octane hydrocarbons.

A new EIA-commissioned study concludes that U.S. petroleum refineries would have "no problem" meeting a requirement to produce 95 RON gasoline beginning in 2022, and assumes that refiners would not use more ethanol beyond current levels to meet such an octane standard. The study, conducted by oil industry consulting firm Baker & O'Brien, Inc., examines a scenario in which all new vehicles beginning with model year 2023 require the use of 95 RON gasoline. According to the study, refiners would simply increase reformer severity to produce higher octane gasoline blendstock, which would then be blended with 10% ethanol to produce a 95 RON finished fuel. The authors found that "…no significant changes in refinery configuration or throughput would be required to meet the minimum 95 RON gasoline requirement."

Increasing the reformer severity to make higher octane gasoline at the refinery "is well within the range of normal operations," the report says, noting that "…existing domestic refineries should have no problem meeting the (95 RON) requirements…" Even as the demand for 95 RON

gasoline grows as more 95 RON-required vehicles enter the fleet in the study's 2027 scenario, refiners "…appear to be able to meet the increased 2027 octane requirements with minor operational adjustments." Contrary to the testimony previously offered to this Subcommittee by witnesses representing the oil industry, the EIA study finds, "No industry-wide capital intensive projects would be needed to meet the 2027 requirements." In fact, the report notes that "…domestic refinery reformer capacity utilization and severity were well below full potential in 2016. This underutilized capacity represents a significant source of potential octane."

The EIA report's central conclusion (i.e., that refiners could easily meet a 95 RON requirement without using more ethanol) is supported by research conducted for the United States Council for Automotive Research (USCAR). The USCAR work shows the incremental cost to refiners of increasing the pool octane rating to 95 RON would be just 3 cents per gallon. In a statement confirming that refiners would not be compelled to use more ethanol, USCAR concludes that "A national 95 RON minimum *E10* gasoline is a near-term, cost-effective fuel economy solution."

The Petroleum Marketers Association of America provided further confirmation that a 95 RON standard would not result in more ethanol use, stating in a recent newsletter that "95 RON can be produced with E0, but…E10 would likely be used to meet the 95 RON standard."

Based on research conducted by the automakers and government laboratories, RFA strongly believes that a national standard establishing a minimum 98-100 RON fuel would provide much greater fuel efficiency gains and greater reductions in tailpipe pollution and GHG emissions. At the same time, a 98-100 RON standard would truly provide new market opportunities for ethanol producers and the farmers who supply feedstock to the ethanol industry. Over the past several years, a growing chorus of automotive engineers and executives, government scientists, expert panels, and university researchers has called for the introduction of HOLC fuels in the 98-100 RON range. This includes the following key statements regarding the need for 98-100 RON fuel from senior automotive executives[5]:

- "Higher octane is necessary for better engine efficiency. It is a proven low-cost enabler to lower CO2; **100 RON fuel is the right fuel for the 2020-2025 timeframe**."— *Dan*

[5] Richard Truett (Automotive News). "Powertrain executives press for higher octane gasoline to help meet mpg, CO2 rules." April 13, 2016.

Nicholson, vice president of global propulsion systems, GM

- "**100 RON has been on the table for a long time**. The only way we will ever get there is to continue to push and work in a collaborative way." — *Tony Ockelford, director of product and business strategy for powertrain operations, Ford Motor Company*

- "We need to find a new equilibrium. **Whether it is 98 or 100 (RON) octane**, **we need something at that level**.*"— Bob Lee, head of powertrain coordination, Fiat Chrysler*

The RFA firmly believes a 98-100 RON standard is what is needed to achieve the full potential of HOLC fuels to maximize efficiency benefits, emissions reductions, consumer savings, and market opportunities for renewable fuel producers and farmers.

c. Directing EPA to allow the use of a 98 RON certification test fuel

While we appreciate that the discussion draft directs EPA to "take such actions as are necessary to allow the use of…" a 98 RON certification test fuel, we note that current statute already allows automakers to petition the Agency to use such a certification test fuel. According to EPA's "Tier 3" regulations:

> …we will allow vehicle manufacturers to specify an alternative test fuel under certain situations. …if manufacturers were to design vehicles that required operation on a higher octane, higher ethanol content gasoline (e.g., dedicated E30 vehicles or FFVs optimized to run on E30 or higher ethanol blends), …they can petition the Administrator for approval of a higher octane, higher ethanol test fuel…This could help manufacturers who wish to raise compression ratios to improve vehicle efficiency as a step toward complying with the 2017 and later light-duty greenhouse gas and CAFE standards.[6]

To date, no automakers have used this process to apply for an alternative certification test fuel.

[6] 79 Fed. Reg. 23528 (April 28, 2014)

d. Specifying the method for determining 2023-2032 RFS requirements for biomass-based diesel, cellulosic biofuel, and advanced biofuel

While we appreciate that the discussion draft does not propose elimination of the RFS requirements for biomass-based diesel, cellulosic biofuel, and other advanced biofuels until 2032, we are concerned by the proposed method for determining future renewable volume obligations for these fuels. Specifically, requiring that the Administrator set future RFS requirements for these renewable fuels based on the previous year's actual production would undermine the market-driving intent and growth focus of the program. In the absence of a growing market opportunity under the RFS, investors will not finance new facilities and technologies and industry would risk flatlining. If the upcoming year's standard can be met with existing facilities and static output levels, there is no incentive to expand production of cellulosic and advanced biofuels, and the RFS becomes a self-fulfilling prophesy of stagnation.

e. Requiring automakers to warrant light-duty vehicles to operate with gasoline containing up to 20% ethanol

The RFA generally supports this provision of the discussion draft, but we believe automakers could and should warrant motor vehicles to operate on blends containing 30% ethanol (E30). Much of the research by automakers and the Department of Energy on ethanol-based HOLC fuels demonstrates that ethanol's unique properties (e.g., high octane number, high octane sensitivity, low carbon content, etc.) are best captured in a blend containing 25-30% ethanol. Further, blending more ethanol with today's marketplace E10 until the ethanol content blended fuel reaches 25-30% results in a finished fuel with an octane rating in the 98 RON range. Meanwhile, adding 20% ethanol to today's typical E0 gasoline blendstock would result in a finished E20 fuel blend with just 95-96 RON, forgoing the additional efficiency and emissions benefits inherent to a 98-100 RON fuel.

f. Requiring the Administrator to grant a fuel waiver allowing the use of gasoline containing 20% ethanol

Just as we believe the proposed provision requiring automakers to warrant their vehicles to operate on E20 should be adjusted to E30, RFA believes this provision should require the EPA to

grant a fuel waiver allowing the use of up to E30 in light-duty vehicles, not just E20. For the reasons described in the previous section, a fuel waiver for blends up to E30 would provide more flexibility and would allow refiners and blenders to more fully capture ethanol's octane and carbon benefits. Moreover, we note that EPA itself has noted the potential of E30 to "enhance the environmental performance of ethanol as a transportation fuel by using it to enable more fuel efficient engines."[7]

g. Extending the 1 psi volatility waiver to blends containing 10% ethanol "*or more*"

RFA supports efforts to establish regulatory parity for all ethanol blends, including volatility requirements. However, we note that a regulatory process is already under way at EPA to alleviate the marketplace barrier associated with EPA's decade's old gasoline volatility regulations.

Reid Vapor Pressure (RVP) is a measure of a fuel's volatility, which is necessary for ignition. Fuels with low volatility are slow to ignite; fuels with a high volatility will ignite quickly. But increased volatility can potentially mean increased evaporative emissions, and consequently the EPA has regulated gasoline volatility in the summer months since the 1980s, generally requiring gasoline to have no more than 9 psi RVP.

Ethanol itself has a very low volatility (roughly 2 psi RVP). But when mixed into gasoline at low levels (10% or less), ethanol reacts with certain hydrocarbons to increase the RVP of the finished blend approximately 1 psi, or generally to about 10 psi RVP.

To accommodate increased ethanol use as an octane component and means of reducing tailpipe emissions, EPA in 1989 provided a 1 psi RVP tolerance to gasoline blended with 9-10% ethanol. EPA did so for two reasons. First, the Agency realized that in the absence of a volatility waiver gasoline marketers intending to use ethanol would have to secure a specially tailored sub-RVP blendstock that was simply not available. Second, the Agency concluded after numerous air quality analyses that the exhaust emissions benefits of ethanol, including greater carbon monoxide and hydrocarbon reductions, outweighed the negligible impact of increased

[7] 79 Fed. Reg. 23529 (April 28, 2014)

evaporative emissions attributable to the 1 psi waiver.

EPA limited its regulatory relief to up to 10% ethanol blends because at the time 10% ethanol was the only ethanol blend with a 211(f) fuel waiver allowing it to be sold commercially. In 2011, EPA granted a partial 211(f) fuel waiver for 15% ethanol, but failed to extend the volatility tolerance to the new fuel, greatly limiting its marketplace opportunities for the exact same reason 10% blends would have been limited – marketers were unable to secure a specially-tailored, sub-RVP blendstock.

The disparate treatment on volatility regulation between E10 and E15 or higher blends has been the single most important barrier to ethanol growth over the past 5 years. Recent research considering changes in vehicle technology since the original RVP waiver was granted has demonstrated the reduced evaporative emissions from today's automobiles and the increased oxygen content of higher ethanol blends provides even more air quality improvement than E10, and that emissions are reduced with higher ethanol blends.

EPA was recently directed by President Trump to initiate a rulemaking extending the RVP waiver to E15 blends. We strongly support this effort. The Agency has committed to completing this rulemaking by June 1, 2019, which is the beginning of the summer "VOC control season" during which retailers in conventional gasoline markets find it difficult or impossible to continue selling E15. It is critical that EPA meet this deadline for a final rule, lest the ethanol industry lose another summer season to bureaucratic malaise.

We appreciate that the discussion draft demonstrates, again, Congressional support for addressing this antiquated and costly RVP barrier.

III. CONCLUSION

Today, the ethanol industry faces needless market constraints and an oversupply related to EPA's failure to implement the RFS appropriately. Thus, consumers are being prevented from accessing lower-cost and cleaner fuel options at the pump. Meanwhile, farmers are dealing with crippling commodity surpluses and the most challenging economics in a generation. And, at the same time, auto companies are seeking high-octane fuels to enable the advanced engine technologies needed to meet increasingly stringent fuel efficiency and emissions standards.

All of these dynamics do create an opportunity for a future energy policy benefiting everyone, while continuing to build on the undeniable successes of the RFS. While a good conversation starter, this discussion draft does not provide the long-term certainty and growth path that America's renewable fuel producers, farmers, automakers, and consumers need. Future fuel policy should augment the RFS program, not simply replace it. We continue to believe future policy measures should recognize both the high-octane benefits of ethanol *and* the carbon benefits of renewable fuels. Following the successful model of the RFS, any future fuel policy should endeavor to simultaneously achieve multiple public policy objectives including economic growth, energy security, environmental improvement, and innovation. The RFA looks forward to continuing to be a part of that discussion.

Thank you.